

IUFRO - International symposium on planted forests  
Bilbao – October, 2006

**Forest plantations in central Africa:  
A powerful tool for natural forest management,  
conservation and rehabilitation**

Jean Noël MARIEN

[marien@cirad.fr](mailto:marien@cirad.fr)

Bernard MALLET

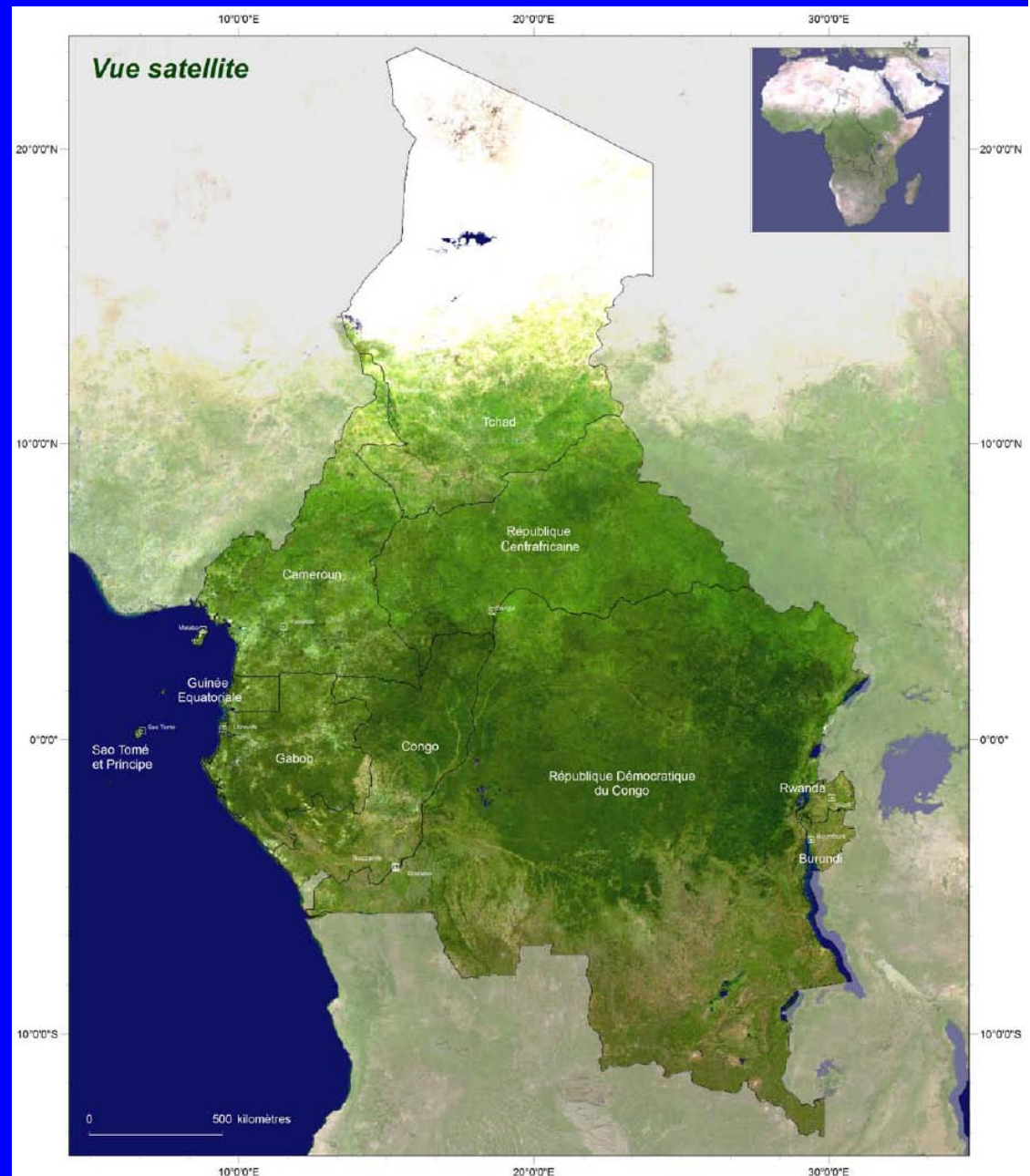
[mallet@cirad.fr](mailto:mallet@cirad.fr)



- **Managing natural forests : the priority**
- **An old plantation dynamic**
- **Plantations & natural forests**
- **New opportunities**

# Managing natural forests: the priority

- **Congo Basin forests:** one of the three main tropical forest regions
- Common processes in the region **COMIFAC, CBFP,...**
- Still relatively small impact from **deforestation**
- An important **socio-economic** value
- **Strong policies** are progressively launched for SFM



# An already long experience in plantations

- **Fast growing exotic species** for industrial wood or energy wood on savannas
- **Monospecific plantations** with local species after removing natural forests
- **Plantations in degraded forests** with natural or exotic species for high quality timber
- **Enrichment of forests** after logging



# An already long experience in plantations

- **Fast growing exotic species** for industrial wood or energy wood on savannas
- **Monospecific plantations** with local species after removing natural forests
- **Plantations in degraded forests** with natural or exotic species for high quality timber
- **Enrichment of forests** after logging





# An already long experience in plantations

- **Fast growing exotic species** for industrial wood or energy wood on savannas
- **Monospecific plantations** with local species after removing natural forests
- **Plantations in degraded forests** with natural or exotic species for high quality timber
- **Enrichment of forests** after logging



# An already long experience in plantations

- **Fast growing exotic species** for industrial wood or energy wood on savannas
- **Monospecific plantations** with local species after removing natural forests
- **Plantations in degraded forests** with natural or exotic species for high quality timber
- **Enrichment of forests** after logging





# Plantations and natural forests

## 1 – New demands for plantation forestry

- International financing strategies and policies
- Privatization of the forest based sector
- Strong environmental pressure
- management plans for all forest concessions
- Strong demand for social benefits (employment,...)
- Evolution in markets and tools (smaller wood)





# Plantations and natural forests

## 2 – a constant evolution for productive forests

- **evolution to be compared with temperate forests**
- Increased pressures on productive forests
- Managing economic sustainability
- centuries of decline (agriculture, industry)
- Rapid increase in area and volume since century 20
- Sustainability does not mean all uses at the same level of management
- Increase in costs induce spatialization of forest priority uses (« wood factories »,...)

# Plantations and natural forests

## 2 – a constant evolution for productive forests

- **evolution to be compared with temperate forests**
- Increased pressures on productive forests
- Managing economic sustainability
- centuries of decline (agriculture, industry)
- Rapid increase in area and volume since century 20
- Sustainability does not mean all uses at the same level of management
- Increase in costs induce spatialization of forest priority uses (« wood factories »,...)

# Plantations and natural forests

## 2 – a constant evolution for productive forests

- evolution to be compared with temperate forests
- Increased pressures on productive forests
- Managing economic sustainability

- Decrease of production areas
- Increase in mobilization costs
- Decrease in mean size of logs
- Increase in environmental issues
- Heterogeneity in management



# Plantations and natural forests

## 2 – a constant evolution for productive forests

- evolution to be compared with temperate forests
- Increased pressures on productive forests
- **Managing economic sustainability**

- Increased wood transformation near the forests
- Promote the use of new species
- Renew the productive stock





# Plantations and natural forests

## 3 – new values

- **Added value to forest concession management plans**
- Economic enhancement of forest value
- Better economic value means better social and ecologic values
- **Plantation tool is an element of concession management and ecological restoration**
- **Political impact in term of territorial organization**
- **Creation of development schemes**

# Plantations and natural forests

## 3 – new values

- Added value to forest concession management plans
- **Economic enhancement of forest value**
- Better economic value means better social and ecologic values
- **Logging more trees on smaller areas means lower costs**
- **Homogeneity in trees means standard products and better markets**
- **Creation of economic flows and infrastructures**

# Plantations and natural forests

## 3 – new values

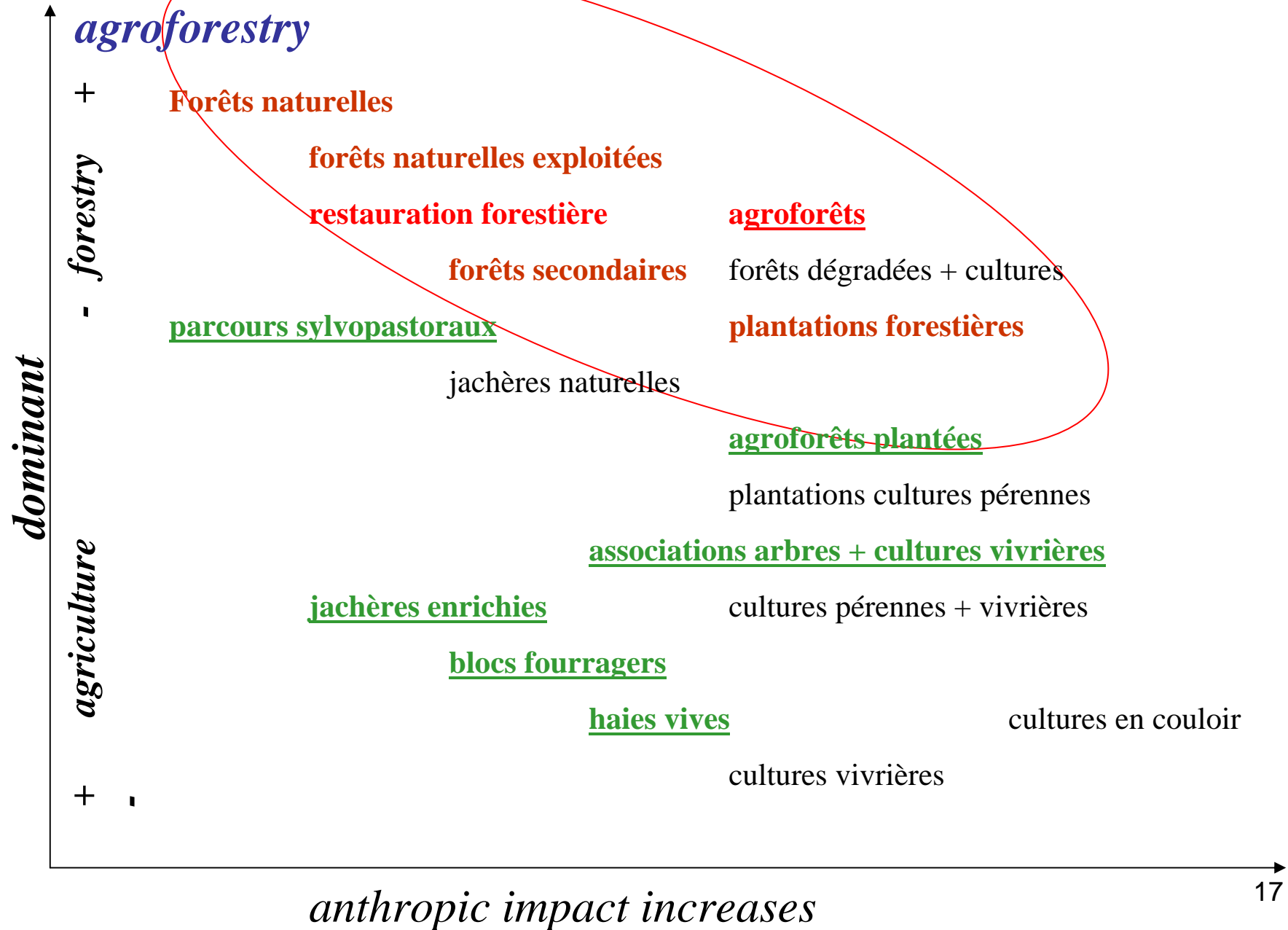
- Added value to forest concession management plans
- Economic and social enhancement of forest value
- **Better economic value means better ecologic values**
- **Rehabilitation of forest diversity with mixed plantations x natural forests**
- **Plantations are a land mark and the last protection before deforestation**
- **Plantation catalytic effect is real**

# Plantations and natural forests

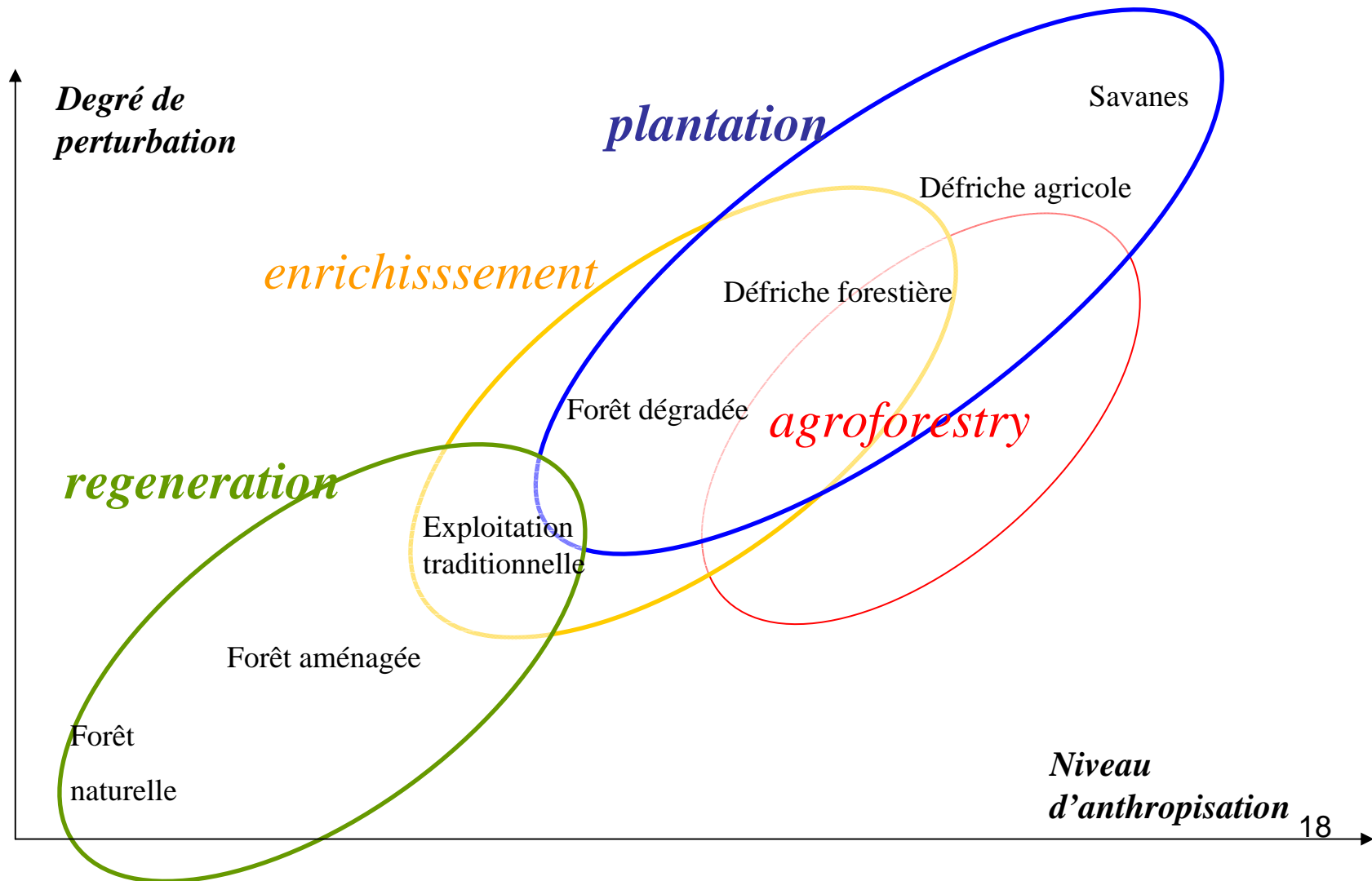
## 4 – new tools



# *Main uses of plantation tools in forest restoration and agroforestry*



## *tools available for forest restoration*



# New opportunities in Congo

## 1 – Plantations are a institutional priority

- Comifac priority
- Forest law
- Management plans

# New opportunities in Congo

## 2 – Preliminary results

- Large number of tests and plantations
- Many species and many sites





# New opportunities in Congo

## 2 –some results

- *Terminalia superba* clonal test, mean 12 m<sup>3</sup>/ha/year at age 20
- *Terminalia superba* provenances trial, from 1,5 to 13 m<sup>3</sup>/ha/year age 13



# New opportunities in Congo

## 2 –some results

- large scale logging by private companies for limba (terminalia) plantations aged 30 to 40 years in southern Congo

2000 ha

100 trees per ha

Mean tree volume is 2,3 m<sup>3</sup>/tree  
age 30-40

Logging costs very low

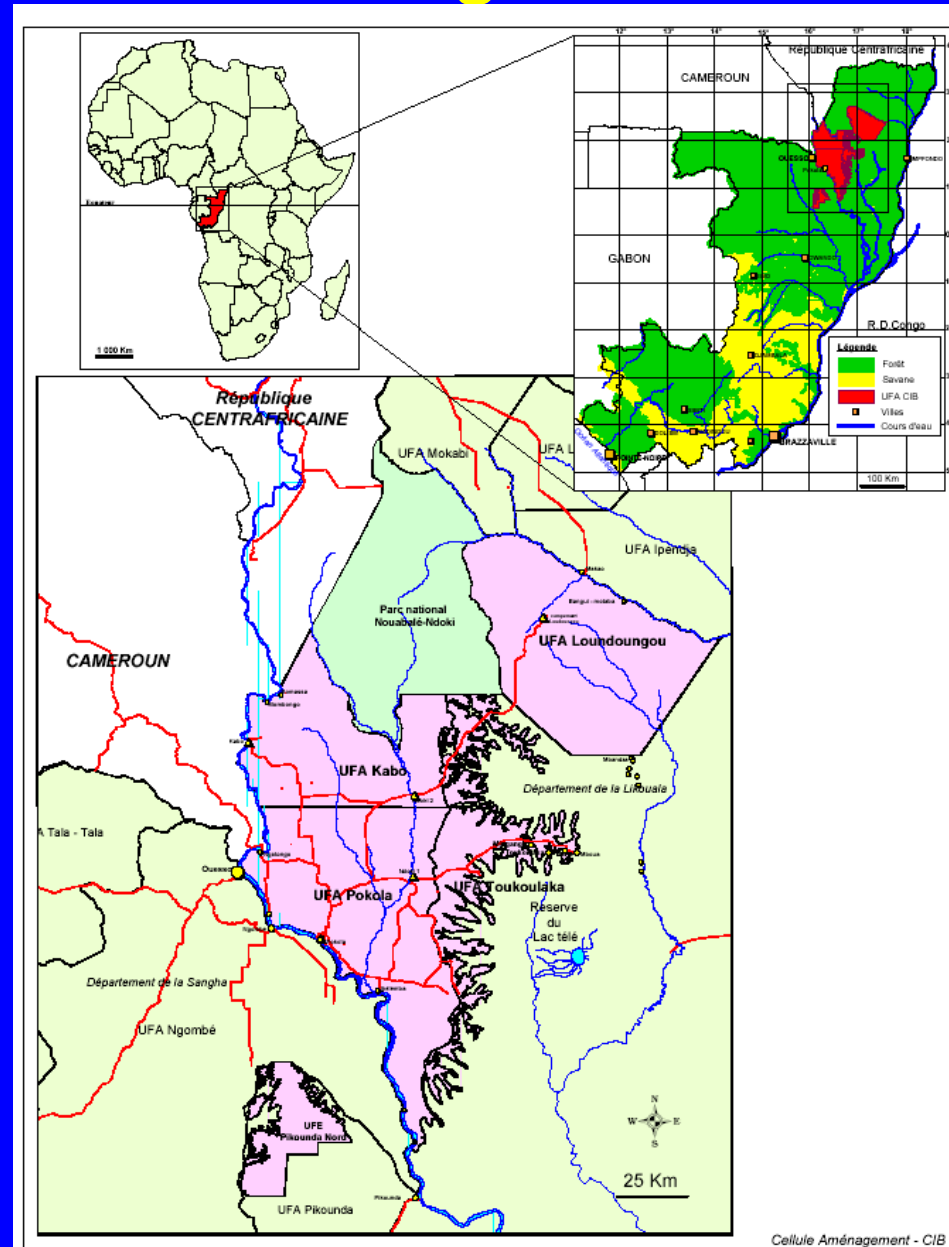
Standard timber is better value  
for transformation

much more benefits than  
traditional management (1 to 2  
trees per ha each 30 years)

# New opportunities in Congo

## 3 – The CIB example

- **What is CIB (1) ?**
- Social and ecological approach integrated in management plans
- A refined methodology for plantations
- Implementation



# New opportunities in Congo

## 3 – The CIB example

- **What is CIB (2) ?**
- Social and ecological approach integrated in management plans
- A refined methodology for plantations
- Implementation



**1.3 million ha  
350 000 m3 round wood  
100% export  
85% local transformation  
FSC certification July 2006  
2000 direct jobs (1st in whole Congo)**





# New opportunities in Congo

## 3 – The CIB example

- What is CIB ?
- **Social and ecological approach integrated in management plans**
- A refined methodology for plantations
- Implementation
- **Adapted management for large areas near Nouabale Ndoki National Park (fauna, communitites,...)**
- **Conservation compartments in productive areas**
- **Agroforestry program near the villages for food supply and lower impact on forest**
- **Reforestation and forest restoration issues**

# New opportunities in Congo

## 3 – The CIB example

- Define priority spots
- What is CIB ?
- Social and ecological approach integrated in management plans
- **A refined methodology for plantations**
- Implementation



# New opportunities in Congo

## 3 – The CIB example

- Select tree species

- What is CIB ?
- Social and ecological approach integrated in management plans
- **A refined methodology for plantations**
- Implementation



# New opportunities in Congo

## 3 – The CIB example

- Adopt the best available techniques
- What is CIB ?
- Social and ecological approach integrated in management plans
- **A refined methodology for plantations**
- Implementation





# New opportunities in Congo

## 3 – The CIB example

- What is CIB ?
- Social and ecological approach integrated in management plans
- A refined methodology for plantations
- **Implementation**

### On going project.....

**New nursery**  
**Large scale reforestation planning**  
**Costs and economic validation**  
**Land tenure**  
**traditional rights evaluation**  
**Incentives and taxes reduction**  
**Risks assessment**

# Conclusion

**Towards (2007) a practical tool (guide) for large scale implementation in commercial forest concessions**



## Happy end for long term research in tropical plantation forestry

